

Amendments to the Specification:

Please replace the 4 paragraphs beginning on page 1, line 10 with the following amended paragraphs:

In the digital broadcast, as illustrated in Fig. 2, various control signals 240 and multimedia data (information) 250 are transmitted in the form being multiplexed to the broadcast video information 210 and audio information 220.

A video information 210 is constituted of a header information A_211 and a the video information itself 212, ~~and the~~ The header information A_211 holds the packet ID for uniquely identifying individual video information pieces, the video ID for uniquely identifying such individual video information pieces as belonging to a continuous video group (e.g., the video portion of a program), and ~~the~~ information about the format of video information and control method.

An audio information 220 is constituted of a header information B_221 and a main part of the audio information 222, ~~and the~~ The header information ~~A221-B 221~~ holds the packet ID for uniquely identifying individual audio information pieces, the audio ID for uniquely identifying such individual audio information pieces as belonging to a continuous audio group (e.g., the audio portion of a program), and ~~the~~ information about the format of audio information.

The control signal 240 is constituted of a header information C_241 and main parts of various control signals, ~~and the~~ The header information C_241 holds the packet ID for uniquely identifying the header information and ~~the~~ information suggesting a kind of representative of one of the control signals. The control signals includes a channel management information 242, a channel format information 243 and a program layout information 244 or the like.

Please replace the paragraph beginning on page 3, line 5 with the following amended paragraph:

The multimedia information 250 is constituted of a header information D_251 and the main part of multimedia information 252, ~~and the~~ The header information D_251 holds the ID for uniquely identifying the multimedia information and ~~the~~ information suggesting-indicating a type of the multimedia information, while the main part of multimedia information 252 holds an screen information constituted of audio, still picture, animation and characters and a execution program for the operation of this screen information.

Please replace the paragraph beginning on page 3, line 22 with the following amended paragraph:

As the standards of this multimedia data 250, there are layout such as BML (Broadcast Markup Language), HTML (Hyper Text Markup Language), data description language and program processing language such as ECMAScript (European Computer Manufacturers Association), Java. These standards can be used selectively depending on various application fields.

Please replace the 4 paragraphs beginning on page 5, line 2 with the following amended paragraphs:

A product ~~mounting-incorporating~~ a tape navigation function is already available in the market. In the case of this product, such a tape navigation system provides ~~the a~~ simplified ~~retrievaling~~ function through management of video and audio ~~indices~~ recorded on the tape under the condition that the self recording/reproducing can be realized within the videotape recorder.

In the first related art, since the this program layout information transmission service is performed individually for each broadcast medium, the data format of program layout information and transmission system are also ~~depending on each dependent on the broadcast medium.~~ ~~and m~~Moreover the program layout information to be transmitted is limited only to the information within such broadcast medium. ~~a, u~~ Users would have been requested, at the time of finding out the program to watch, to retrieve the program by manipulating the program guide function of each medium such as terrestrial analog broadcasting, terrestrial digital broadcasting, broadcast satellite digital broadcasting and communication satellite digital broadcasting or the like.

Moreover, in the second related art, there is a limitation that the contents cannot be read even when the tape on which the programs are recorded with the other videotape recorder is set to the recorder ~~mounting-having~~ the tape navigation function and also there is a problem that only the channel number in the recording and broadcast time can be displayed as the indices and it becomes more difficult to discriminate the recorded contents as the number of recording tapes increases.

In addition, these electric program guide function and tape navigation function are ~~mounted-provided~~ on individual devices such as television receiver and videotape recorder or the like. Therefore, it is very troublesome for user to select first in the television side the device to watch connected to the television receiver and then to drive the applications of the respective devices using different remote-controllers.

Please replace the paragraph beginning on page 7, line 19 with the following amended paragraph:

Figs. 1A and 1B collectively is a diagram illustrating a hardware structure of a video/audio information retrieving apparatus and a format of the index information of the video/audio information as an embodiment of the present invention;

Please replace the paragraph beginning on page 8, line 11 with the following amended paragraph:

Figs. 6A - 6C ~~is-aare~~ diagrams illustrating ~~a~~-display examples of the search display image as an embodiment of the present invention;

Please replace the paragraph beginning on page 8, line 18 with the following amended paragraph:

Fig. 8 is a diagram illustrating a hardware structure of the video/audio information retrieving apparatus ~~mounting-incorporating~~ an analog tuner as ~~thein~~ another embodiment of the present invention;

Please replace the 9 paragraphs beginning on page 9, line 4 with the following amended paragraphs:

An embodiment of the present invention is illustrated in Figs. 1A and 1B. Fig. 1A illustrates a structure of a video/audio information retrieving apparatus.

In Fig. 1A, numeral 10 designates a microprocessor ~~for arithmetic operations~~ to perform various kinds of ~~arithmetic~~-operations based on the programs and data stored in a memory 13. Numeral 29, designates a search process unit to realize the search process for the video/audio information pieces as an example of such ~~arithmetic~~-operations performed by the microprocessor 10.

Numeral 24 designates a large capacity non-volatile external memory for storing video and audio data and various management data. Numeral 12, is a remote control interface unit for receiving a remote control operation signal from a user and notifies such signals to the microprocessor 10; 25, is a display memory for generating the user's manipulation display image; 26, is a video processing unit for outputting the manipulation display data generated in the display memory 25 from a video signal output terminal 28 as the video signal.

Numeral 1, is a signal input terminal from which the packet-multiplexed and modulated signal of the video/audio/control data guided from an antenna is inputted; 2, is a tuner/FEC (Forward Error Correction) unit for receiving the digital television broadcast signal of the predetermined channel, demodulating this signal and executing the error correction of such demodulated signal; 3, is a descramble unit for canceling the scramble of the scrambled signal for the limited receiving; and 4, is a demultiplexing unit for demultiplexing and outputting the predetermined video/audio/control signal from the

packet-multiplexed signal. Various demultiplexed signals are transferred to the memory 13.

The video/audio information pieces demultiplexed on the memory 13 are then transferred to an external memory 24 with the microprocessor 10 and stored therein.

Numeral 11, represents a modem for transmitting and receiving through the telephone the charging information of the pay broadcast and the data for multimedia information by user operation line.

Moreover, 8, depicts a digital interface for exchange of the video/audio information and various device control information pieces with the other digital home appliances 9 via the communication path 14. The video/audio signals from the other digital home appliances 9 are sequentially transferred to the memory 13 and moreover transferred and then recorded to the external memory 24 from the memory 13 with the microprocessor 10.

On the contrary, moreover, the video/audio information pieces recorded in the external memory 24 are then sequentially read to the memory 13 with the microprocessor 10 and can also be transferred to the other digital devices 9 via the digital interface 8. In this case, it is possible to add various control signals 250-240 and multimedia data 250 to the video/audio information pieces through the multiplexing.

This process can be realized with the microprocessor 10 by ~~instructing sending the data to be added with the microprocessor 10 to the packet multiplexing unit 8-27 and which then by-multiplexes ing, with the packet multiplexing unit 8,~~ the data ~~to be added to~~with the video/audio data to be outputted via the digital interface 8.

Please replace the 2 paragraphs beginning on page 12, line 14 with the following amended paragraphs:

The interpreter 42 executes the multimedia information 43 ~~not depending on the specifications~~independent of the programming of the microprocessor 10. The interpreter 42 is a program that executes on the microprocessor 10 and can perform operations indicated in the multimedia information 43 by interpreting it to the program of microprocessor 10. The microprocessor 10 can therefore execute the single a given multimedia information 43 in the same manner ~~even in among~~ different digital broadcast receivers by ~~introducing use of~~ such an interpreter 42.

In Fig. 1A, the hardware structure comprising the digital television broadcast receiver is illustrated, but it is also possible to consider the hardware structure comprising the analog broadcast receiver as illustrated in Fig. 8. In this case, the tuner unit 21, A/D converter unit 22 and MPEG encoder 23 illustrated in Fig. 8 are ~~mounted-provided~~ in place of the tuner/FEC unit 2, descramble unit 3, demultiplexing unit 4 and modem 11 illustrated in Fig. 1A.

Please replace the paragraph beginning on page 15, line 25 with the following amended paragraph:

The video/audio information transferred from the other digital home appliance 9 via the digital interface unit 8 is then recorded ~~in direct in onto~~ the medium in the tape drive 53. Moreover, ~~on the occasion~~ in the case of reproducing the video/audio information that is recorded in the storage medium, the video/audio information outputted from the tape drive 53 is outputted ~~in directly~~ to the other digital home appliance 9 via the digital interface unit 8.

Please replace the 2 paragraphs beginning on page 16, line 16 with the following amended paragraphs:

The video/audio information transferred from the other digital home appliance 9 via the digital interface unit 8 is converted in the format suitable for the storage medium in the packet demultiplexing/format converting unit 51 and is then recorded on the storage medium in the disc drive 50. Moreover, ~~on the occasion~~ in the case of reproducing the video/audio information recorded on the storage medium, the format is ~~inversely~~ converted to the initial video/audio information via the format conversion/packet multiplexing unit 52 and is then outputted to the other digital home appliance 9 via the digital interface unit 8.

The video/audio information is recorded to the external memory 24 of Fig. 1A and the index information 100 for management of location and various attributes of the video/audio information illustrated in Fig. 1B is also simultaneously stored in every video/audio information. In the index information 100, not only the video/audio information recorded in the video/audio information retrieving apparatus 31 but also the index information of the video/audio information recorded in the digital tape recorder 32 and digital disc recorder 33 and the program layout information 244 obtained with the digital broadcast receiver 30 are transmitted to via the digital interface unit 8 to the video/audio information retrieving apparatus 31 and is then stored therein in the form of integrated management.

Please replace the 2 paragraphs beginning on page 17, line 24 with the following amended paragraphs:

Next, the information to be set to the index information 100 depending on the video/audio medium will ~~then~~ be explained below.

A type of medium in which the video/audio information is broadcasted or recorded will be explained depending on the contents of the class of medium 101. In ~~more practical practice, as the broadcasting includes,~~ analog broadcasting, broadcast satellite digital broadcasting, communication satellite digital broadcasting, cable television digital broadcasting and Internet broadcasting or the like or the sub-genre of these broadcasts ~~are considered~~. As the storage media, CD, video CD, DVD video, DVD audio that can be reproduced with the digital disc recorder 33, DVD-RAM that can be recorded and reproduced, digital VHS and digital video cassette as the digital videotape recorder 32, VHS as the analog videotape recorder and moreover hard disc or the sub-genre of these media ~~can be considered~~ are typical.

Please replace the 9 paragraphs beginning on page 20, line 5 with the following amended paragraphs:

In the case where the video/audio information is recorded with the digital tape recorder 32, the recorded local index information is transmitted to the video/audio information retrieving apparatus 31 via the digital interface 14, the channel ID 102, program ID 103, broadcast start time 104, broadcast time 105, content title 109, genre code 110, viewer age restriction information 111, copying restriction information 112, content detail information 113 and type of service 114 are set from the recorded initial program layout information, ~~t.~~ The ID for uniquely identifying the recorded tape is set to the medium ID 106, the ID for uniquely identifying the video/audio information in the tape is set to the content ID 107 in the medium, and the storing position from the beginning of the tape is set to the relative position 108 in the medium. Moreover, the user keyword 116 stores the keyword that a user can set freely using the soft keyboard with the remote controller.

The video/audio information retrieving apparatus 31 reads (501), as indicated ~~as 500~~ in the flow diagram 500 of Fig. 7, the accumulated index information 100 from the external memory 24 and converts this index information to the multimedia information format conforming to the digital television standards(502). Next, such apparatus 31 also converts the converted index information 100 and the program for retrieving this information to the format of multimedia information 43 of Fig. 4, then couples (503) and divides the generated multimedia information to the packets (504).

Finally, the divided packets are read from the external memory by sequentially setting these packets to the packet multiplexing unit 27 of Fig. 1 (505), ~~and thereby t.~~ The multimedia information having the generated video/audio information retrieving function is multiplexed and then outputted as the multimedia information incorporated with the video/audio information outputted via the digital interface 14.

In this case, when the digital broadcast receiver 30 having receiving the output from the video/audio information retrieving apparatus 31 reproduces the video/audio information and instructs start of multimedia execution function with the remote control unit. Therefore, the video/audio information can be retrieved by interpreting and executing the multimedia information.

Moreover, the multimedia information having the video/audio information retrieving function is not required to be multiplexed as the multimedia information incorporated with the video/audio information. For example, it is also possible to introduce a method to output the information ~~than that~~ can hold only the multimedia information as the structural element for the broadcast channel.

In this case, the digital broadcast receiver 30 which receives the output from the video/audio information retrieving apparatus 31 automatically interprets and executes the multimedia information because there is no video/audio information to realize the video/audio information retrieval.

In addition, ~~the a~~ channel different from that having the video/audio information is provided ~~and thereby to employ therein an~~ embodiment which introduces ~~the a~~ structure to transmit only the multimedia information having the video/audio information retrieving function.

In this case, the digital broadcast receiver 30 having received the output of the video/audio information retrieving apparatus 31 reproduces the video/audio information. Here, when the channel to which the multimedia information having the video/audio information retrieving function is selected with the remote control unit of the digital broadcast receiver 30, the multimedia information is automatically interpreted and executed to realize the video/audio information retrieval.

In the multimedia information to execute the video/audio information retrieval, the index information 100 of these broadcast media can be retrieved under various conditions. Figs. 6A - 6C ~~is an example~~ are examples of the display image in this retrieval.